Encoding Shapes and their Differences with Functional Maps

Maks Ovsjanikov

Ecole Polytechnique

`maks@lix.polytechnique.fr`

In this talk I will describe several ways for compactly encoding differences between shapes using functional maps. Unlike standard techniques, that summarize a dissimilarity between shapes using a scalar-valued, these approaches allow to reveal which shape parts are similar or different, in a multi-scale manner. I will then describe several ways for recovering the shapes themselves from these differences, both using geometric and learning-based techniques [1, 2, 3].

Joint work with: Ruqi Huang, Etienne Corman, Justin Solomon, Mirela Ben-Chen, Leonidas Guibas, Panos Achlioptas, Omri Azencot and Raif Rustamov.

References

[1] M. Ovsjanikov, M. Ben-Chen, J. Solomon, A. Butscher, and L. Guibas, "Functional Maps: A Flexible Representation of Maps Between Shapes," *ACM Transactions on Graphics (TOG)*, vol. 31, no. 4, p. 30, 2012.

[2] R. M. Rustamov, M. Ovsjanikov, O. Azencot, M. Ben-Chen, F. Chazal, and L. Guibas, "Map-based exploration of intrinsic shape differences and variability," *ACM Transactions on Graphics*, vol. 32, no. 4, p. 1, 2013.

[3] E. Corman, J. Solomon, M. Ben-Chen, L. Guibas, and M. Ovsjanikov, "Functional characterization of intrinsic and extrinsic geometry," *ACM Trans. Graph.*, vol. 36, pp. 14:1–14:17, Mar. 2017.